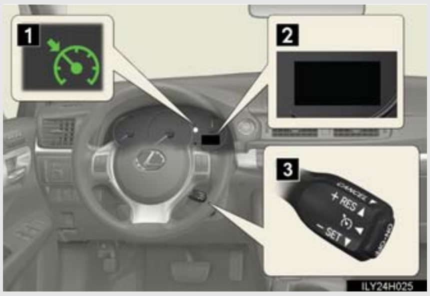
# Cruise control*

Use the cruise control to maintain a set speed without depressing the accelerator pedal.




1 Indicator
2 Display
3 Cruise control switch

## Setting the vehicle speed

STEP 1




Press the "ON-OFF" button to activate the cruise control.

Press the button again to deactivate the cruise control.

*: If equipped

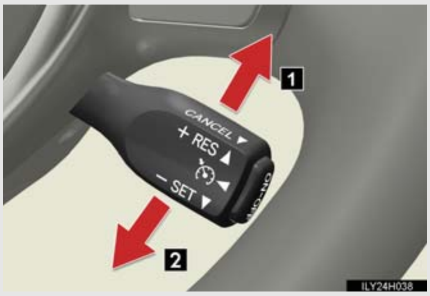



Accelerate or decelerate the vehicle to the desired speed, and push the lever down to set the speed.

"SET" will be displayed.

### Adjusting the set speed

To change the set speed, operate the lever until the desired set speed is obtained.




1 Increases the speed

2 Decreases the speed

Fine adjustment: Momentarily move the lever in the desired direction.

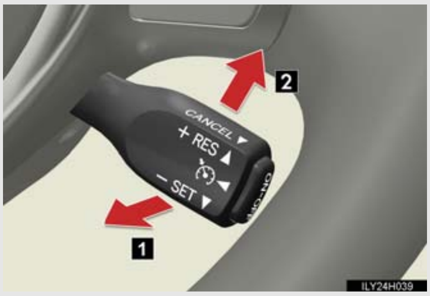
Large adjustment: Hold the lever in the desired direction.

The set speed will be increased or decreased as follows:

Fine adjustment: By approximately 1 mph (1.6 km/h) each time the lever is operated.

Large adjustment: The set speed can be increased or decreased continually until the lever is released.

## Canceling and resuming the constant speed control




**1** Pulling the lever toward you cancels the constant speed control.

The speed setting is also canceled when the brakes are applied.

**2** Pushing the lever up resumes the constant speed control.

Resuming is available when the vehicle speed is more than approximately 25 mph (40 km/h).

---

### Cruise control can be set when

- The shift position is in D.
- Vehicle speed is above approximately 25 mph (40 km/h).

### Accelerating

The vehicle can be accelerated normally. After acceleration, the set speed resumes.

### Automatic cruise control cancellation

Cruise control will stop maintaining the vehicle speed in any of the following situations.

- Actual vehicle speed falls more than approximately 10 mph (16 km/h) below the preset vehicle speed.
  At this time, the memorized set speed is not retained.
- Actual vehicle speed is below approximately 25 mph (40km/h).
- Enhanced VSC is activated.

**CAUTION**

- **To avoid operating the cruise control by mistake**

  Switch the cruise control off using the "ON-OFF" button when not in use.

- **Situations unsuitable for cruise control**

  Do not use cruise control in any of the following situations.
  Doing so may result in loss of control and could cause an accident resulting in death or serious injury.

  - In heavy traffic
  - On roads with sharp bends
  - On winding roads
  - On slippery roads, such as those covered with rain, ice or snow
  - On steep hills
    Vehicle speed may exceed the set speed when driving down a steep hill.
  - When emergency towing

# Dynamic radar cruise control*

Dynamic radar cruise control supplements conventional cruise control with a vehicle-to-vehicle distance control. In vehicle-to-vehicle distance control mode, the vehicle automatically accelerates or decelerates in order to maintain a set following distance from vehicles ahead.




1 Indicators
2 Display
3 Set speed
4 Vehicle-to-vehicle distance button
5 Cruise control switch

*: If equipped

**n Setting the vehicle speed (vehicle-to-vehicle distance control mode)**

STEP 1




Press the "ON-OFF" button to activate the cruise control.

Press the button again to deactivate the cruise control.

STEP 2

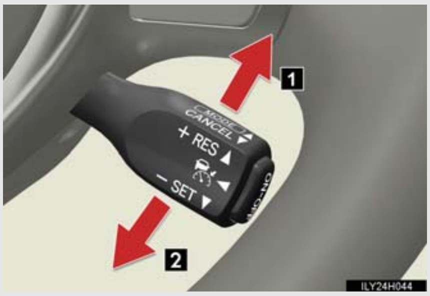



Accelerate or decelerate the vehicle to the desired speed, and push the lever down to set the speed.

"SET" will be displayed.

### Adjusting the set speed

To change the set speed, operate the lever until the desired set speed is displayed.




1 Increases the speed

2 Decreases the speed

Fine adjustment: Momentarily move the lever in the desired direction.

Large adjustment: Hold the lever in the desired direction.

In the vehicle-to-vehicle distance control mode, the set speed will be increased or decreased as follows:

**When the set speed is shown in "MPH"**

Fine adjustment: By approximately 1 mph (1.6 km/h) each time the lever is operated

Large adjustment: By approximately 5 mph (8 km/h) for each 0.75 seconds the lever is held

**When the set speed is shown in "km/h"**

Fine adjustment: By approximately 0.6 mph (1 km/h) each time the lever is operated

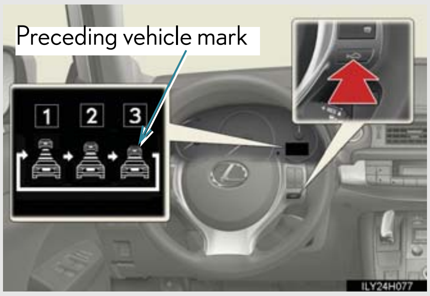
Large adjustment: By approximately 3.1 mph (5 km/h) for each 0.75 seconds the lever is held

In the constant speed control mode (→P. 226), the set speed will be increased or decreased as follows:

Fine adjustment: By approximately 1 mph (1.6 km/h) each time the lever is operated

Large adjustment: The set speed can be increased or decreased continually until the lever is released.

## Changing the vehicle-to-vehicle distance



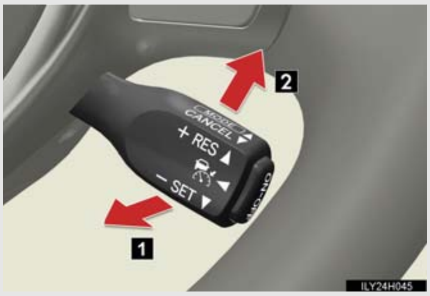

Pressing the button changes the vehicle-to-vehicle distance as follows:

1. Long
2. Medium
3. Short

The vehicle-to-vehicle distance is set automatically to long mode when the "POWER" switch is turned to ON mode.

If a vehicle is running ahead of you, the preceding vehicle mark will also be displayed.

## Canceling and resuming the speed control




1. Pulling the lever toward you cancels the cruise control.

   The speed setting is also canceled when the brakes are applied.

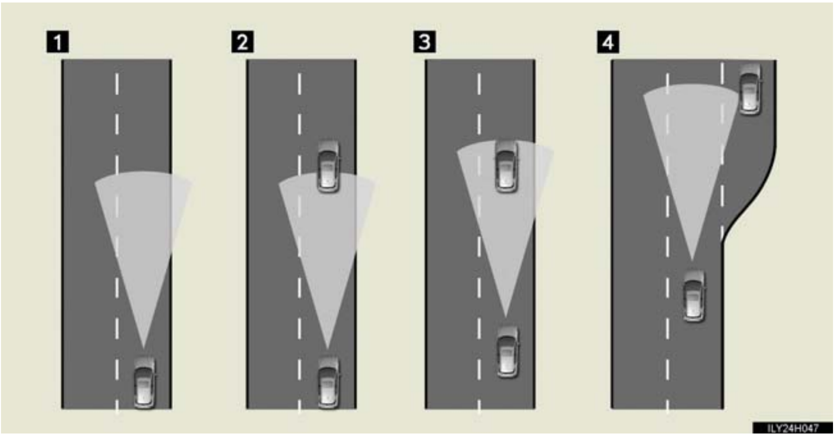
2. Pushing the lever up resumes the cruise control and returns vehicle speed to the set speed.

   Resuming is available when the vehicle speed is more than approximately 25 mph (40 km/h).

## Driving in vehicle-to-vehicle distance control mode

This mode employs a sensor to detect the presence of vehicles up to approximately 400 ft. (120 m) ahead and to judge the distance between your vehicle and those the vehicle ahead of you.

Note that vehicle-to-vehicle distance will close in when traveling on long downhill slopes.



**1** Example of constant speed cruising
When there are no vehicles ahead

The vehicle travels at the speed set by the driver. The desired vehicle-to-vehicle distance can also be set by operating the vehicle-to-vehicle distance control.

**2** Example of deceleration cruising
When the vehicle ahead is driving slower than the set speed

When a vehicle is detected running ahead of you, the system automatically decelerates your vehicle. When a greater reduction in vehicle speed is necessary, the system applies the brakes. A warning tone warns you when the system cannot decelerate sufficiently to prevent your vehicle from closing in on the vehicle ahead.

**3** Example of follow-up cruising
When following a vehicle driving slower than the set speed

The system continues follow-up cruising while adjusting for changes in the speed of the vehicle ahead in order to maintain the vehicle-to-vehicle distance set by the driver.

**4** Example of acceleration
When there are no longer any vehicles ahead driving slower than the set speed

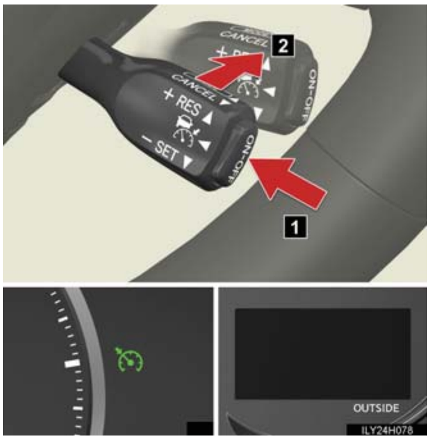
The system accelerates until the set speed is reached. The system then returns to constant speed cruising.

## Approach warning

When your vehicle is too close to a vehicle ahead, and sufficient automatic deceleration via the cruise control is not possible, the display will flash and the buzzer will sound to alert the driver. An example of this would be if another driver cuts in front of you while you are following a vehicle. Apply the brakes to ensure an appropriate vehicle-to-vehicle distance.

## Selecting conventional constant speed control mode

Dynamic radar cruise control can be used as conventional cruise control if you select constant speed control mode.




1 Press the "ON-OFF" button to activate the cruise control.

Press the button again to deactivate the cruise control.

Vehicle-to-vehicle distance control mode is always reset when the "POWER" switch is turned to ON mode.

2 Switch to constant speed control mode.
(Push the lever forward and hold for approximately one second.)

Cruise control indicator will come on.

Adjusting the speed setting:
→P. 222

Canceling and resuming the speed setting: →P. 223

## Dynamic radar cruise control can be set when

- The shift position is in D.
- Vehicle speed is above approximately 30 mph (50 km/h).

## Switching modes

The mode cannot be switched to constant speed control mode if vehicle-to-vehicle distance control mode has been used. The mode also cannot be switched from constant speed control to vehicle-to-vehicle distance control mode. Turn the system off by pressing the "ON-OFF" button, and turn it on again.

## Accelerating

The vehicle can accelerate normally. After acceleration, the set speed resumes. However, during vehicle-to-vehicle distance control mode, the vehicle speed may decrease below the set speed in order to maintain the distance to the vehicle ahead.

## Set speed

The set speed may be unsustainable depending on driving circumstances.

## Automatic cancelation of vehicle-to-vehicle distance control

Vehicle-to-vehicle distance control driving is automatically canceled in the following situations:

- Actual vehicle speed falls below approximately 25 mph (40 km/h).
- Enhanced VSC is activated.
- The sensor cannot operate correctly because it is covered in some way.
- The windshield wipers are operating at high speed.

If vehicle-to-vehicle distance control driving is automatically canceled for any other reason, there may be a malfunction in the system. Contact your Lexus dealer.

**Automatic cancelation of constant speed control**

The cruise control will stop maintaining the vehicle speed in the following situations:

- Actual vehicle speed is more than approximately 10 mph (16 km/h) below the set vehicle speed.
  At this time, the memorized set speed is not retained.
- Vehicle speed falls below approximately 25 mph (40 km/h).
- Enhanced VSC is activated.

**Vehicle-to-vehicle distance settings**

Select a distance from the table below. Note that the distances shown correspond to a vehicle speed of 50 mph (80 km/h). Vehicle-to-vehicle distance increases/ decreases in accordance with vehicle speed.

| Distance options | Vehicle-to-vehicle distance |
|---|---|
| Long | Approximately 160 ft. (50 m) |
| Medium | Approximately 130 ft. (40 m) |
| Short | Approximately 100 ft. (30 m) |

**Radar sensor and grille cover**

Always keep the sensor and grille cover clean to ensure that the vehicle-to-vehicle distance control operates properly. (Some obstructions, such as snow, ice and plastic objects, cannot be detected by the obstruction sensor.)
Dynamic radar cruise control is canceled if an obstruction is detected.




1 Grille cover

2 Radar sensor

■ **Warning messages and buzzers for dynamic radar cruise control**

Warning messages and buzzers are used to indicate a system malfunction or to inform the driver of the need for caution while driving. (→P. 593)

■ **Approach warning**

In the following instances, there is a possibility that the warnings will not occur:

- When the speed of the vehicle ahead matches or exceeds your vehicle speed
- When the vehicle ahead is traveling at an extremely slow speed
- Immediately after the cruise control speed was set
- At the instant the accelerator is applied

■ **Certification**

**For vehicles sold in the U.S.A.**

FCC ID: HYQDNMWR005

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC WARNING
Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Radiofrequency radiation exposure Information:
This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.
This equipment should be installed and operated with minimum distance of 20 cm between the radiator (antenna) and your body.
This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

**For vehicles sold in Canada**

Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

**CAUTION**

**Before using dynamic radar cruise control**

Do not overly rely on vehicle-to-vehicle distance control.
Be aware of the set speed. If automatic deceleration/acceleration is not appropriate, adjust the vehicle speed, as well as the distance between your vehicle and vehicles ahead by applying the brakes etc.

**Cautions regarding the driving assist systems**

Observe the following precautions.
Failure to do so may cause an accident resulting in death or serious injury.

- Assisting the driver to measure following distance
  The dynamic radar cruise control is only intended to help the driver in determining the following distance between the driver's own vehicle and a designated vehicle traveling ahead. It is not a mechanism that allows careless or inattentive driving, and it is not a system that can assist the driver in low-visibility conditions. It is still necessary for driver to pay close attention to the vehicle's surroundings.
- Assisting the driver to judge proper following distance
  The dynamic radar cruise control determines whether the following distance between the driver's own vehicle and a designated vehicle traveling ahead is appropriate or not. It is not capable of making any other type of judgement. Therefore, it is absolutely necessary for the driver to remain vigilant and to determine whether or not there is a possibility of danger in any given situation.
- Assisting the driver to operate the vehicle
  The dynamic radar cruise control has no capability to prevent or avoid a collision with a vehicle traveling ahead. Therefore, if there is ever any danger, the driver must take immediate and direct control of the vehicle and act appropriately in order to ensure the safety of all involved.

**To avoid inadvertent cruise control activation**

Switch the cruise control off using the "ON-OFF" button when not in use.

**CAUTION**

**Situations unsuitable for dynamic radar cruise control**

Do not use dynamic radar cruise control in any of the following situations.
Doing so may result in inappropriate speed control and could cause an accident resulting in death or serious injury.

- In heavy traffic
- On roads with sharp bends
- On winding roads
- On slippery roads, such as those covered with rain, ice and snow
- On steep downhills, or where there are sudden changes between sharp up and down gradients
  Vehicle speed may exceed the set speed when driving down a steep hill.
- At entrances to expressways
- When weather conditions are bad enough that they may prevent the sensors from functioning correctly (fog, snow, sandstorm, heavy rain, etc.)
- When an approach warning buzzer is heard often
- When emergency towing

**When the sensor may not be correctly detecting the vehicle ahead**

Apply the brakes as necessary when any of the following types of vehicles are in front of you.
As the sensor may not be able to correctly detect these types of vehicles, the approach warning (→P. 229) will not be activated, and a fatal or serious accident may result.

- Vehicles that cut in suddenly
- Vehicles traveling at low speeds
- Vehicles that are not moving
- Vehicles with small rear ends (trailers with no load on board etc.)
- Motorcycles traveling in the same lane

**CAUTION**

**Conditions under which the vehicle-to-vehicle distance control may not function correctly**

Apply the brakes as necessary in the following conditions as the radar sensor may not be able to correctly detect vehicles ahead, and a fatal or serious accident may result:

- When water or snow thrown up by the surrounding vehicles hinders the functioning of the sensor
- When your vehicle is pointing upwards (caused by a heavy load in the luggage compartment etc.)
- When the road curves or when the lanes are narrow
- When steering wheel operation or your position in the lane is unstable
- When the vehicle ahead of you decelerates suddenly

**Handling the radar sensor**

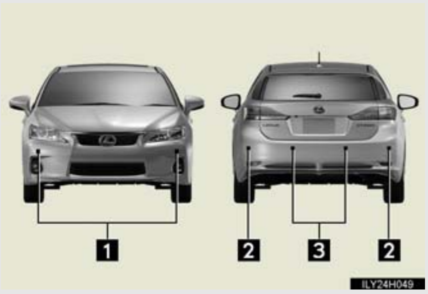
Observe the following to ensure the cruise control system can function effectively. Otherwise, the system may not function correctly and could result in an accident.

- Keep the sensor and front grille cover clean at all times.
  Clean the sensor and front grille cover with a soft cloth so you do not mark or damage them.
- Do not subject the sensor or surrounding area to a strong impact.
  If the sensor moves even slightly off position, the system may malfunction. If the sensor or surrounding area is subject to a strong impact, always have the area inspected and adjusted by a Lexus dealer.
- Do not disassemble the sensor.
- Do not attach accessories or stickers to the sensor, grille cover or surrounding area.
- Do not modify or paint the sensor and grille cover.
- Do not replace them with non-genuine parts.

# Intuitive parking assist*

The distance from your vehicle to nearby obstacles when parallel parking or maneuvering into a garage is measured by the sensors and communicated via the multi-information display, touch screen and a buzzer. Always check the surrounding area when using this system.

## n Types of sensors

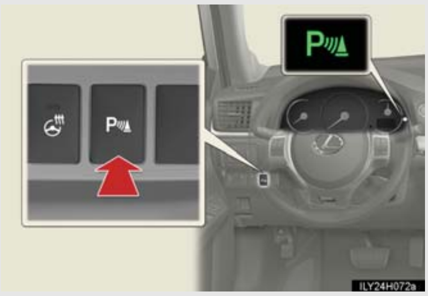



1 Front corner sensors

2 Rear corner sensors

3 Rear center sensors

## n Intuitive parking assist switch




Turns the intuitive parking assist on/off

When on, the indicator light comes on to inform the driver that the system is operational.

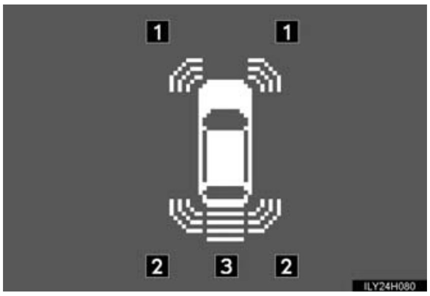


*: If equipped

## Display

When the sensors detect an obstacle, a graphic is shown on the multi information display depending on the position and distance to the obstacle.

### Multi-information display



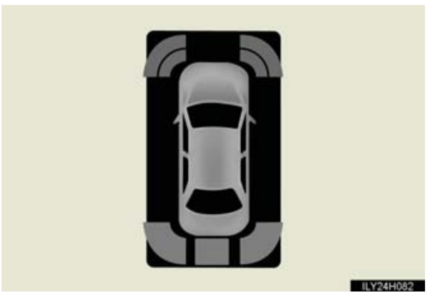

1 Front corner sensor operation
2 Rear corner sensor operation
3 Rear center sensor operation

### Touch screen




When the vehicle is moving forward

A graphic is automatically displayed when an obstacle is detected. The screen can be set so that the graphic is not displayed. Refer to the "Navigation System Owner's Manual".




When the vehicle is moving backward

A simplified image is displayed on the right upper corner of the touch screen when an obstacle is detected.

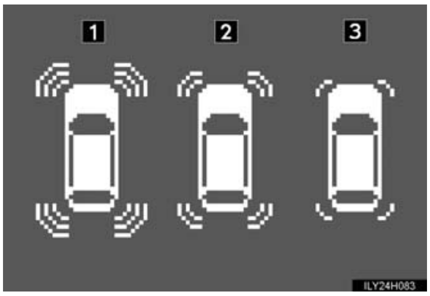
## The distance display and buzzer

When a sensor detects an obstacle, the direction of and the approximate distance to the obstacle are displayed and the buzzer sounds.

### Distance display

**Corner sensors**

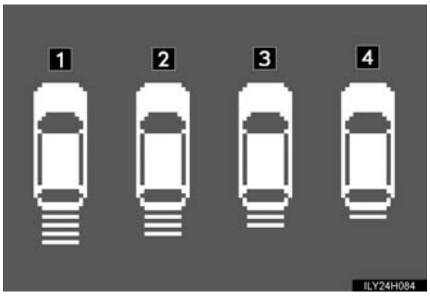
The system operates when the vehicle approaches within approximately 1.6 ft. (50 cm) of an obstacle.




1. Approximately 1.2 ft. (37.5 cm) to 1.6 ft. (50 cm) from the obstacle
2. Approximately 0.8 ft. (25 cm) to 1.2 ft. (37.5 cm) from the obstacle
3. Flashing: Within 0.8 ft. (25 cm) of the obstacle

**Rear center sensors**

The system operates when the vehicle approaches within approximately 4.9 ft. (150 cm) of an obstacle.




1. Approximately 2.0 ft. (60 cm) to 4.9 ft. (150 cm) from the obstacle
2. Approximately 1.5 ft. (45 cm) to 2.0 ft. (60 cm) from the obstacle
3. Approximately 1.1 ft. (35 cm) to 1.5 ft. (45 cm) from the obstacle
4. Flashing: Within 1.1 ft. (35 cm) of the obstacle

### n Buzzer operation and distance to an obstacle

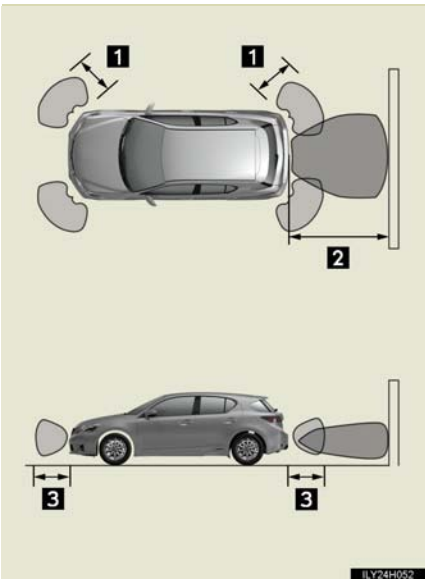
A buzzer sounds when the corner sensors and rear center sensor are operating.

l The buzzer beeps faster as the vehicle approaches an obstacle. When the vehicle comes within the following distance of the obstacle, the buzzer sounds continuously:

- Corner sensors: Approximately 0.8 ft. (25 cm)
- Rear sensors: Approximately 1.1 ft. (35 cm)

l When 2 or more obstacles are detected simultaneously, the buzzer system responds to the nearest obstacle.

## Detection range of the sensors




1 Approximately 1.6 ft. (50 cm)
2 Approximately 4.9 ft. (150 cm)
3 Approximately 1.6 ft. (50 cm)

The diagram shows the detection range of the sensors. Note that the sensors cannot detect obstacles that are extremely close to the vehicle.

The range of the sensors may change depending on the shape of the object etc.

## Sensor detection information

- Certain vehicle conditions and the surrounding environment may affect the ability of a sensor to correctly detect an obstacle. Particular instances where this may occur are listed below.
  - There is dirt, snow or ice on a sensor.
  - A sensor is frozen.
  - A sensor is covered in any way.
  - The vehicle is leaning considerably to one side.
  - On an extremely bumpy road, on an incline, on gravel, or on grass
  - The vicinity of the vehicle is noisy due to vehicle horns, motorcycle engines, air brakes of large vehicles, or other loud noises producing ultrasonic waves.
  - There is another vehicle equipped with parking assist sensors in the vicinity.
  - A sensor is coated with a sheet of spray or heavy rain.
  - The vehicle is equipped with a fender pole or radio antenna.
  - Towing eyelets are installed.
  - A bumper or sensor receives a strong impact.
  - The vehicle is approaching a tall or right-angled curb.
  - In harsh sunlight or intense cold weather
  - A non-genuine Lexus suspension (lowered suspension etc.) is installed.

In addition to the examples above, there are instances in which, because of their shape, signs and other objects may be judged by a sensor to be closer than they are.

- The shape of the obstacle may prevent a sensor from detecting it. Pay particular attention to the following obstacles:
  - Wires, fences, ropes, etc.
  - Cotton, snow and other materials that absorb sound waves
  - Sharply-angled objects
  - Low obstacles
  - Tall obstacles with upper sections projecting outwards in the direction of your vehicle

**If the display flashes and a message is displayed**

→P. 593

**Customization**

Settings (e.g. buzzer volume) can be changed. (Customizable features →P. 684)

**Certification**

**For vehicles sold in the U.S.A.**
This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions; (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

**For vehicles sold in Canada**
This ISM device complies with Canadian ICES-001.

Cet appareil ISM est conforme à la norme NMB-001 du Canada.

**CAUTION**

**Caution when using the intuitive parking assist-sensor**

Observe the following precautions.
Failure to do so may result in the vehicle being unable to be driven safely and possibly cause an accident.

- Do not use the sensor at speeds in excess of 6 mph (10 km/h).
- Do not attach any accessories within the sensor range.

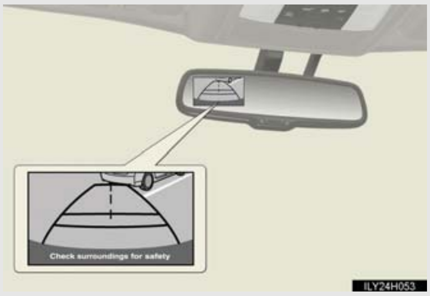
**NOTICE**

**Notes when washing the vehicle**

Do not apply intensive bursts of water or steam to the sensor area.
Doing so may result in the sensor malfunctioning.

# Rear view monitor system*

**The rear view monitor system assists the driver by displaying an image of the view behind the vehicle while reversing. The image is displayed in reverse on the screen. This allows the image to appear in the same manner as that of the rear view mirror.**




The rear view image is displayed when the shift position is in R and the "POWER" switch is in ON mode.

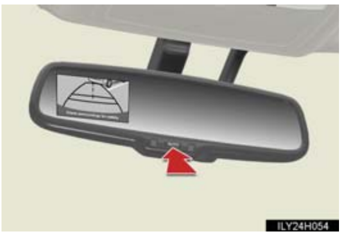
This reversed image is a similar image to the one on the inside rear view mirror.

If you shift the shift position to any positions other than R, the screen is turned off.



*: If equipped

■ **Switching the screen**



- To temporarily turn off the monitor when it is on.
  Push the "AUTO" button. The indicator should turn orange.
  The monitor will automatically turn on again after the "POWER" switch is turned OFF and ON.
- To manually turn on the monitor when it is turned off.
  Push the "AUTO" button. The indicator should turn green.

■ **When using the rear view monitor system**

The anti-glare function of the inside rear view mirror will be canceled.

■ **Automatic shut off**

The display will be turned off automatically after 5 minutes.

■ **Display mode**

The rear view monitor display mode can be adjusted when the "POWER" switch is in ON mode and the shift position is in R.

- To select a display language (English, French or Spanish).

STEP 1 Push and hold the "AUTO" button for 6 to 12 seconds.
The monitor should turn on and the indicator should turn green.

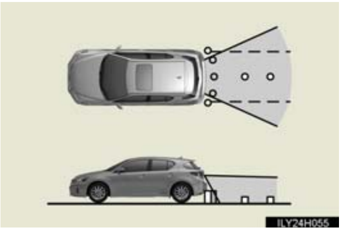
STEP 2 Push the "AUTO" button.

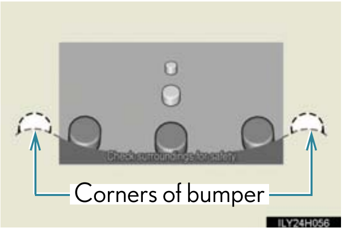
STEP 3 Each time the "AUTO" button is pushed and released, the language will change.
The warning message should flash 5 seconds after the button is released, indicating that the change has been completed.

- To permanently disable the monitor.
Push and hold the "AUTO" button for 12 to 15 seconds.
The monitor will turn off and on after 6 seconds. Continue holding the button down until the display turns back off.
The indicator should flash orange.
The monitor will not automatically turn on again after the "POWER" switch is turned OFF and ON.

- To manually turn on the monitor when it is turned off.
Push the "AUTO" button. The indicator should turn green.

n **Displayed area**

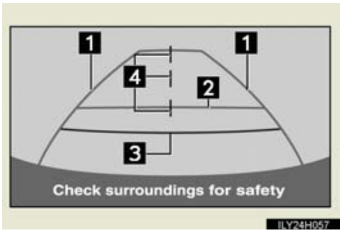



The area covered by the camera is limited. Objects which are close to either corner of the bumper or under the bumper cannot be seen on the screen.

The area displayed on the screen may vary according to vehicle orientation or road conditions.

n **Rear view monitor guide lines**




Guide lines are displayed on the screen.

Guide lines shown differ from those shown on the actual screen.

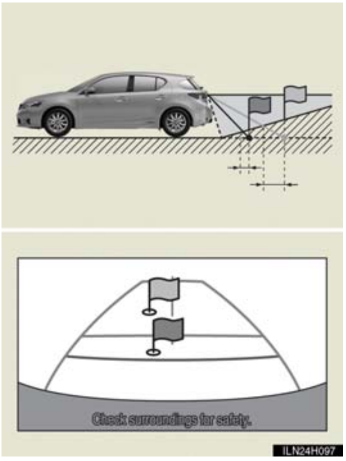
1 Vehicle width extension guide lines (blue)
These lines indicate the estimated vehicle width extension.

2 Distance guide line (blue)
This line indicates a position on the ground about 3 ft. (1 m) behind on the ground of the rear bumper of your vehicle.

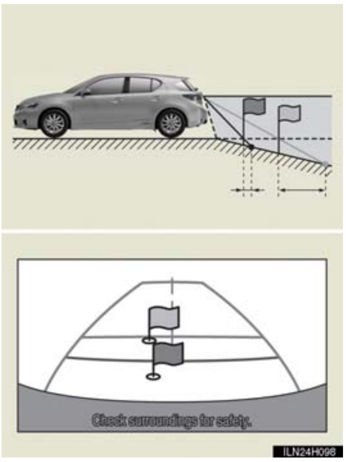
3 Distance guide line (red)
This line indicates a position on the ground about 1.5 ft. (0.5 m) behind on the ground of the rear bumper of your vehicle.

4 Vehicle center guide lines (blue)
These lines indicate the estimated vehicle center on the ground.

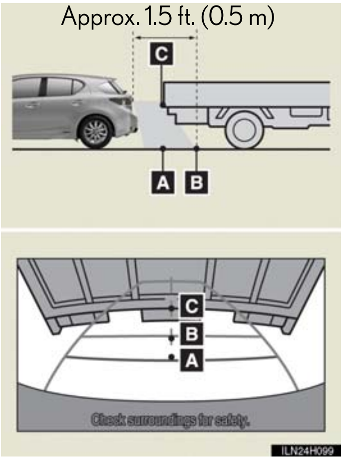
■ **Driving precautions**




When the grade behind the vehicle slopes up sharply, objects appear to be farther away than they actually are.




When the grade behind the vehicle slopes down sharply, objects appear to be closer than they actually are.




The distance that appears on the screen between three-dimensional objects (such as vehicles) and flat surfaces (such as the road) and the actual distance differ as follows.

In reality, C = A < B (C and A are equally far away; B is farther than C and A). However, on the screen, the situation appears to be A < B < C.

On the screen, it appears that a truck is parking about 1.5 ft. (0.5 m) away. However, in reality if you back up to point A, you will hit the truck.

■ **Rear view monitor system camera**




- The camera uses a special lens. The distance of the image that appears on the screen differs from the actual distance.
- In the following cases, it may be difficult to see the images on the screen, even when the system is functioning correctly.
  - In the dark (e.g. at night).
  - If the temperature near the lens is extremely high or low.
  - If water droplets get on the camera, or when humidity is high (e.g. when it rains).
  - If foreign matter (e.g. snow or mud) get on the camera lens.
  - If the sun or headlights are shining directly into the camera lens.
  - When the camera has scratches or dirt on it.
  - A bright object such as a white wall is reflected in the mirror surface over the monitor.
  - When the camera is used under fluorescent light, sodium lights, or mercury lights etc., the lights and the illuminated areas may appear to flicker.

## ■ Smear effect




If a bright light (e.g. sunlight reflected off the vehicle body) is picked up by the camera, a smear effect* peculiar to the camera may occur.

*: Smear effect – A phenomenon that occurs when a bright light (for example, sunlight reflected off the vehicle body) is picked up by the camera; when transmitted by the camera, the light source appears to have a vertical streak above and below it.

## ■ Flicker effect

When the camera is used under fluorescent lights, sodium lights, mercury lights, etc., the lights and the illuminated areas may appear to flicker.

CAUTION

**When using the rear view monitor system**

Observe the following precautions to avoid an accident that could result in death or serious injuries.

- Never depend solely on the monitor system when reversing.
- Always check visually and with the mirrors to confirm your intended path is clear.
- Depicted distances between objects and flat surfaces differ from actual distances.
- Do not use the system if the back door is not completely closed.
- Never back up while looking only at the screen. The image on the screen is different from actual conditions. Depicted distances between objects and flat surfaces will differ from actual distance. If you back up while looking only at the screen, you may hit a vehicle, a person or an object. When backing up, be sure to check behind and all around the vehicle visually and with mirrors before proceeding.
- Always check the vehicle surrounding area, because the guide lines are ancillary.
- The guide lines are ancillary lines and does not change even if the steering wheel is turned.

**CAUTION**

**Conditions which may affect the rear view monitor system**

- If the back of the vehicle has been hit, the camera's position and mounting angle may have been changed. Have the vehicle inspected by your Lexus dealer.
- Rapid temperature changes, such as when hot water is poured on the vehicle in cold weather, may cause the system to function abnormally.
- If the camera lens is dirty, it cannot transmit a clear image. Rinse with water and wipe with a soft cloth. If the camera lens is extremely dirty, wash with a mild cleanser and rinse.
- The displayed image may be darker and moving images may be slightly distorted when the system is cold.
- When washing the vehicle, do not apply intensive bursts of water to the camera or camera area. Doing so may result in the camera malfunctioning.
- Do not allow organic solvent, car wax, window cleaner or glass coat to adhere to the camera. If this happens, wipe it off as soon as possible.
- As the camera has a water proof construction, do not detach, disassemble or modify it. This may cause incorrect operation.
- Do not hit the camera or subject it to strong impacts as this may cause its position and mounting angle to change.
- Do not scrub the camera lens roughly or clean it with a hard brush or abrasive cleaner. Doing so may damage the lens and adversely affect the image.

# Driving assist systems

**To help enhance driving safety and performance, the following systems operate automatically in response to various driving situations. Be aware, however, that these systems are supplementary and should not be relied upon too heavily when operating the vehicle.**

## ABS (Anti-lock Brake System)

Helps to prevent wheel lock when the brakes are applied suddenly, or if the brakes are applied while driving on a slippery road surface

## Brake assist

Generates an increased level of braking force after the brake pedal is depressed when the system detects a panic stop situation

## VSC (Vehicle Stability Control)

Helps the driver to control skidding when swerving suddenly or turning on slippery road surfaces

## TRAC (Traction Control)

Helps to maintain drive power and prevent the drive wheels from spinning when starting the vehicle or accelerating on slippery roads

## EPS (Electric Power Steering)

Employs an electric motor to reduce the amount of effort needed to turn the steering wheel

## Enhanced VSC (Enhanced Vehicle Stability Control)

Provides cooperative control of the ABS, TRAC, VSC and EPS.
Helps to maintain directional stability when swerving on slippery road surfaces by controlling steering performance.

## Hill-start assist control

→P. 254

## PCS (Pre-Collision System) (if equipped)

→P. 256

## When the VSC/TRAC systems are operating



If the vehicle is in danger of slipping or if any of the drive wheels spins, the slip indicator light flashes to indicate that the VSC/TRAC systems are operating.



### ■ Sounds and vibrations caused by the ABS, brake assist, VSC and TRAC

- A sound may be heard from the engine compartment when the hybrid system is started, just after the vehicle begins to move, if the brake pedal is depressed forcefully or repeatedly, or 1-2 minutes after the hybrid system is stopped. This sound does not indicate that a malfunction has occurred in any of these systems.
- Any of the following conditions may occur when the above systems are operating. None of these indicates that a malfunction has occurred.
  - Vibrations may be felt through the vehicle body and steering.
  - A motor sound may be heard after the vehicle comes to a stop.
  - The brake pedal may pulsate slightly after the ABS is activated.
  - The brake pedal may move down slightly after the ABS is activated.

### ■ EPS operation sound

When the steering wheel is operated, a motor sound (whirring sound) may be heard. This does not indicate a malfunction.

### ■ Reduced effectiveness of the EPS system

The effectiveness of the EPS system is reduced to prevent the system from overheating when there is frequent steering input over an extended period of time. The steering wheel may feel heavy as a result. Should this occur, refrain from excessive steering input or stop the vehicle and turn the hybrid system off. The EPS system should return to normal within 10 minutes.

**CAUTION**

- **The ABS does not operate effectively when**
  - Tires with inadequate gripping ability are used (such as excessively worn tires on a snow covered road).
  - The vehicle hydroplanes while driving at high speed on wet or slick road.
- **Stopping distance when the ABS is operating will exceed that of normal conditions**

  The ABS is not designed to shorten the vehicle's stopping distance. Always maintain a safe distance from the vehicle in front of you in the following situations:
  - When driving on dirt, gravel or snow-covered roads
  - When driving with tire chains
  - When driving over bumps in the road
  - When driving over roads with potholes or roads with uneven surfaces
- **TRAC may not operate effectively when**

  Directional control and power may not be achievable while driving on slippery road surfaces, even if the TRAC system is operating.
  Do not drive the vehicle in conditions where stability and power may be lost.
- **When the VSC is activated**

  The slip indicator light flashes. Always drive carefully. Reckless driving may cause an accident. Exercise particular care when the indicator light flashes.

**CAUTION**

n **Replacing tires**

Make sure that all tires are of the specified size and of the same brand, tread pattern and total load capacity. In addition, make sure that the tires are inflated to the recommended tire inflation pressure level.

The ABS and VSC systems will not function correctly if different tires are installed on the vehicle.
Contact your Lexus dealer for further information when replacing tires or wheels.

n **Handling of tires and the suspension**

Using tires with any kind of problem or modifying the suspension will affect the driving assist systems, and may cause a system to malfunction.

# Hill-start assist control

**Hill-start assist control helps to prevent the vehicle from rolling backwards when starting on an incline or slippery slope.**



To engage hill-start assist control, further depress the brake pedal when the vehicle is stopped completely.

A buzzer will sound once to indicate the system is activated. The slip indicator will also start flashing.

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■ **Hill-start assist control can be operated when**

- The shift position is in a position other than P.
- The parking brake is not applied.
- The accelerator pedal is not depressed.

■ **Hill-start assist control**

- While hill-start assist control is operating, the brakes remain automatically applied after the driver releases the brake pedal. The stop lights and the high mounted stoplight turn on.
- Hill-start assist control operates for about 2 seconds after the brake pedal is released.
- If the slip indicator does not flash and the buzzer does not sound when the brake pedal is further depressed, slightly reduce the pressure on the brake pedal (do not allow the vehicle to roll backward) and then firmly depress it again. If the system still does not operate, check if the operating conditions explained above have been met.

■ **Hill-start assist control buzzer**

- When hill-start assist control is activated, the buzzer will sound once.
- In the following situations, hill-start assist control will be canceled and the buzzer will sound twice.
  - No attempt is made to drive the vehicle within approximately 2 seconds of releasing the brake pedal.
  - Push the P position switch.
  - The parking brake is applied.
  - The brake pedal is depressed again.
  - The brake pedal has been depressed for more than approximately 3 minutes.

■ **If the slip indicator comes on**

It may indicate a malfunction in the system. Contact your Lexus dealer.

**CAUTION**

■ **Hill-start assist control**

- Do not overly rely on hill-start assist control. Hill-start assist control may not operate effectively on extremely steep inclines or roads covered in ice.
- Unlike the parking brake, hill-start assist control is not intended to hold the vehicle stationary for an extended period of time. Do not attempt to use hill-start assist control to hold the vehicle on an incline for an extended period of time, as doing so may lead to an accident.

# Pre-Collision System*

**When the radar sensor possibility of a frontal collision, the pre-collision system such as the brakes and seat belts are automatically engaged to lessen impact and injuries to occupants as well as vehicle damage.**

## Pre-collision seat belts (front seat belts only)

If the pre-collision sensor detects that a collision is unavoidable, the pre-collision system will retract the seat belt before the collision occurs.
The same will happen if the driver makes an emergency braking or loses control of the vehicle. (→P. 88)
However, when the VSC system is disabled, the system will not operate in the event of skidding.

## Pre-collision brake assist

When there is a high possibility of a frontal collision, the system applies greater braking force in relation to how strongly the brake pedal is depressed.

## Pre-collision braking

When there is a high possibility of a frontal collision, the system warns the driver using a warning light, warning display and buzzer. If the system determines that a collision is unavoidable, the brakes are automatically applied to reduce the collision speed. Pre-collision braking can be disabled using the pre-collision braking off switch.

*: If equipped

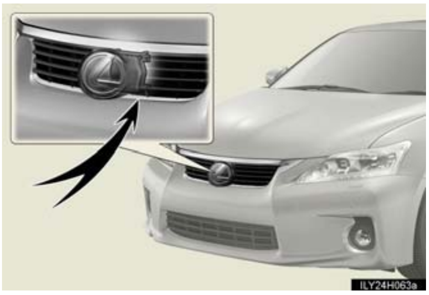
## Disabling pre-collision braking




1. Pre-collision braking disabled
2. Pre-collision braking enabled

   The "PCS" warning light will turn on when pre-collision braking is disabled.

## Radar sensor



The radar sensor detects vehicles or other obstacles on or near the road ahead and determines whether a collision is imminent based on the position, speed, and heading of the obstacles.

**The pre-collision system is operational when**

- Pre-collision seat belts (type A)
  - Vehicle speed is greater than about 19 mph (30 km/h).
  - The system detects sudden braking or skidding.
  - The front occupants are wearing a seat belt.
- Pre-collision seat belts (type B)
  - Vehicle speed is greater than about 4 mph (5 km/h).
  - The speed at which your vehicle is approaching the obstacle or oncoming vehicle is greater than about 19 mph (30 km/h).
  - The front occupants are wearing a seat belt.
- Pre-collision brake assist:
  - Vehicle speed is greater than about 19 mph (30 km/h).
  - The speed at which your vehicle is approaching the obstacle or the vehicle running ahead of you is greater than about 19 mph (30 km/h).
  - The brake pedal is depressed.
- Pre-collision braking:
  - The pre-collision braking off switch is not pressed.
  - Vehicle speed is greater than about 10 mph (15 km/h).
  - The speed at which your vehicle is approaching the obstacle or the vehicle running ahead of you is greater than about 10 mph (15 km/h).

## Conditions that may trigger the system even if there is no possibility of a collision

- When there is an object by the roadside at the entrance to a curve
- When passing an oncoming vehicle on a curve
- When driving over a narrow iron bridge
- When there is a metal object on the road surface
- When driving on an uneven road surface
- When passing an oncoming vehicle on a left-turn
- When your vehicle rapidly closes on the vehicle in front
- When a grade separation/interchange, sign, billboard, or other structure appears to be directly in the vehicle's line of travel
- When the steep angle of the road causes a metal object located beneath the road surface to be seen ahead of the vehicle

When the system is activated in the situations described above, there is also a possibility that the seat belts will retract quickly and the brakes will be applied with a force greater than normal. When the seat belt is locked in the retracted position, stop the vehicle in a safe place, release the seat belt and refasten it.

- When an extreme change in vehicle height occurs
- When the axis of the radar is out of adjustment
- When passing through certain toll gates
- When passing through an overpass

## Obstacles not detected

The sensor cannot detect plastic obstacles such as traffic cones. There may also be occasions when the sensor cannot detect pedestrians, animals, bicycles, motorcycles, trees, or snowdrifts.

## When there is a malfunction in the system

Warning lights and/or warning messages will turn on or flash. (→P. 580, 593)

- **Situations in which the pre-collision system does not function properly**

  The system may not function effectively in situations such as the following:
  - On roads with sharp bends or uneven surfaces
  - If a vehicle suddenly moves in front of vehicle, such as at an intersection
  - If a vehicle suddenly cuts in front of vehicle, such as when overtaking
  - In inclement weather such as heavy rein, fog, snow or sand storms
  - When your vehicle is skidding with the VSC system off
  - When an extreme change in vehicle height occurs
  - When the axis of the radar is out of adjustment

- **Automatic cancelation of the pre-collision system**

  When a malfunction occurs due to sensor contamination, etc. that results in the sensors being unable to detect obstacles, the pre-collision system will be automatically disabled. In this case, the system will not activate even if there is a collision possibility.

■ **Certification**

**For vehicles sold in the U.S.A.**

FCC ID: HYQDNMWR005

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC WARNING
Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Radiofrequency radiation exposure Information:
This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.
This equipment should be installed and operated with minimum distance of 20 cm between the radiator (antenna) and your body.
This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

**For vehicles sold in Canada**

Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

## CAUTION

**Limitations of the pre-collision system**

Do not overly rely on the pre-collision system. Always drive safely, taking care to observe your surroundings and checking for any obstacles or other road hazards. Failure to do so may cause an accident resulting in death or serious injury.

**Cautions regarding the assist contents of the system**

By means of alarms and brake control, the pre-collision system is intended to assist the driver in avoiding collisions through the process of LOOK-JUDGE-ACT. There are limits to the degree of assistance the system can provide, so please keep in mind the following important points.

- Assisting the driver in watching the road
  The pre-collision system is only able to detect obstacles directly in front of the vehicle, and only within a limited range. It is not a mechanism that allows careless or inattentive driving, and it is not a system that can assist the driver in low-visibility conditions. It is still necessary for the driver to pay close attention to the vehicle's surroundings.
- Assisting the driver in making correct judgement
  When attempting to estimate the possibility of a collision, the only data available to the pre-collision system is that from obstacles it has detected directly in front of the vehicle. Therefore, it is absolutely necessary for the driver to remain vigilant and to determine whether or not there is a possibility of collision in any given situation.
- Assisting the driver in taking action
  The pre-collision system's braking assist feature is designed to help reduce the severity of a collision, and so only acts when the system has judged that a collision is unavoidable. This system by itself is not capable of automatically avoiding a collision or bringing the vehicle to a stop safely. For this reason, when encountering a dangerous situation the driver must take direct and immediate action in order to ensure the safety of all involved.

**CAUTION**

- **When the sensor may not be correctly detecting the vehicle ahead**

  Apply the brakes as necessary in any of the following situations.

  - When water or snow thrown up by the surrounding vehicles hinders the functioning of the sensor
  - When your vehicle is pointing upwards (caused by a heavy load in the luggage compartment etc.)
  - Vehicles that cut in suddenly
  - Vehicles with small rear ends (trailers with no load on board etc.)
  - Motorcycles traveling in the same lane

- **Handling the radar sensor**

  Observe the following to ensure the pre-collision system can function effectively:

  - Keep the sensor and front grille cover clean at all times.
    Clean the sensor and front grille cover with a soft cloth so you do not mark or damage them.
  - Do not subject the sensor or surrounding area to a strong impact.
    If the sensor moves even slightly off position, the system may malfunction. If the sensor or surrounding area is subject to a strong impact, always have the area inspected and adjusted by your Lexus dealer.
  - Do not disassemble the sensor.
  - Do not attach accessories or stickers to the sensor, grille cover or surrounding area.
  - Do not modify or paint the sensor and grille cover.